

## How happy is your pet? The problem of subjectivity in the assessment of companion animal welfare

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### Abstract

The ability to evaluate the welfare of non-human animals accurately and objectively is influenced by a variety of factors including the nature of our relationships with them. Subjective biases in the perception of an animal's quality of life can have either positive or negative consequences for its welfare and are likely to be particularly exaggerated in the case of companion animals, such as dogs, cats and other pet species, with which people tend to form strong anthropomorphic, attachment-based relationships. The consequences of these subjective biases are likely to be further exacerbated by the fact that many of the physical and behavioural attributes that humans find appealing, and have selected for, in companion animals, are inherently detrimental to their welfare. Using a range of examples, this paper explores some of the complex ways in which anthropomorphism and subjectivity can cloud our ability to make reliable judgements concerning the welfare of companion animals, even in the face of seemingly obvious and overt indicators of pain and suffering.

**Keywords:** animal welfare, anthropomorphism, companion animals, health, pets, subjectivity

### Introduction

Detachment and objectivity are values that inform how science, ideally, should be practiced. When attempting to uncover truths about some aspect of the natural world, scientists are expected to be aware of, and to attempt to eliminate, personal biases, prejudices, and *a priori* commitments while also detaching themselves emotionally from their subject matter (Howard 1985). In practice, of course, true objectivity in science is aspirational rather than fully achievable. Scientists are only human and, like everyone else, may find it difficult to remain detached and objective when they have a strong personal interest in their object of study.

An illustration of the nature of this problem is provided by Fraser *et al* (1997) who posed a hypothetical scenario involving two dog owners who meet while walking their dogs. One of these owners:

...had grown up in a small family that valued health, safety and orderly, disciplined behaviour. The dog of this owner received regular veterinary care, two meals a day of low-fat dog food, and was walked on a leash. The other owner had grown up in a large community that valued conviviality, sharing of resources and close contact with the natural world. This dog (the owner's third — the first two had been killed by cars) had burrs in its coat, was fed generously but sporadically, and had never worn a collar in its life. Each owner, judging quality of life from very different viewpoints, felt sorry for the other's dog

The obvious point of the story is that each person tends to view the quality of life of non-human animals through the lens of his or her own subjective beliefs, attitudes, and values, and that these inevitably colour perceptions of the animals' welfare. The conventional welfare scientist's response to this dilemma is to focus on the accurate and objective measurement of things that are likely to be relevant to the welfare of these two dogs — eg regularity of meals, levels of physical restraint, risks of injury, and so on — while also acknowledging that the ultimate determination of how well or poorly each dog is faring is going to be largely subjective, since it will depend on the individual, and potentially biased, perceptions and beliefs of whoever is making the judgement (Mason & Mendl 1993; Fraser 1995). If this is the case, however, it raises important questions regarding the particular factors that may interfere with our ability to recognise and prioritise the things that actually matter to the animals, and hence make sensible and effective recommendations to improve their welfare. In Fraser *et al*'s (1997) example, the emphasis is on differences in personal values — health, safety and discipline versus *laissez faire* communal life and contact with nature. The current discussion will focus instead on the influence of past and current relationships with animals, particularly companion animals, on our ability to make objective assessments of their welfare.

## Human-animal relationships as obstacles to objectivity

The tendency to attribute ‘minds’ or mental states to others (‘theory of mind’) is thought to have evolved as a social adaptation that allows normal adult humans to use introspection and self-knowledge as a model for understanding and anticipating the feelings and behaviour of other humans (Humphrey 1983; Mithen 1996). Since humans are so intensely social, however, their desire for connection often leads them to imbue non-human as well as human others with human-like traits (Epley *et al* 2008; Waytz *et al* 2010). This predisposition is generally termed ‘anthropomorphism’ and is usually defined as the tendency to attribute human-like mental capacities, such as intentionality, emotions, and cognition, to non-human agents and entities (Epley *et al* 2008). Anthropomorphic attributions also affect the moral status given to non-humans. Beings which are believed to possess human-like minds are typically afforded greater moral consideration and better treatment than those deemed to have lesser mental capacities (Gray *et al* 2012).

Not surprisingly, the tendency to anthropomorphise is particularly strong in relation to non-human animals (henceforth ‘animals’), especially those that are phylogenetically close to, or which resemble, humans either physically or behaviourally (Burghardt & Herzog 1989; Plous 1993; Serpell 2004). Anthropomorphism also appears to be amplified by social relationships and attachments with particular animals, such as pets, especially if these attachments develop early in life (Myers & Saunders 2002). Numerous studies have demonstrated associations between childhood pet ownership and the development of positive attitudes and practices toward animals in adulthood, including an increased likelihood of owning companion animals in the future, more sympathetic views on the treatment of both companion and non-companion animals, greater willingness to support animal protection causes, and a propensity to avoid eating certain animal-based food products (Serpell 1981; Paul & Serpell 1993; Paul 2000; Rothgerber & Mican 2014). Studies of veterinary students further indicate that early affiliative relationships with animals are strong predictors of later professional orientations. For instance, veterinary students who grow up with household dogs and cats are more likely to gravitate toward careers in small animal practice, while those who grow up with horses and ponies are more strongly inclined toward equine practice (Serpell 2005). It is also likely that anthropomorphism — in this case, the ability to attribute human-like social motivations and needs to companion animals — is what ultimately enables these animals to provide their owners with the widely reported psychological and physical benefits associated with pet ownership (Serpell 2003; Epley *et al* 2008).

Their apparent ability to trigger ‘innate’ parental motivations, further suggests that companion animals, or at least some companion animals, may act as supernormal stimuli. The term ‘supernormal stimulus’ was first coined by the Dutch ethologist and Nobel laureate, Niko Tinbergen, to

describe the tendency of animals (including humans) to display open-ended preferences for biologically relevant stimuli that are more extreme or exaggerated than would occur in nature (Tinbergen 1951). For example, Tinbergen observed that, when offered the choice between a normal egg and an artificial, supersized one, nesting oystercatchers (*Haematopus ostralegus*) will attempt to incubate the unnaturally large egg in preference to their own normally sized one. Extrapolating from this original concept, various authors subsequently concluded that the intrinsically appealing, anthropomorphic or pedomorphic features of things like teddy bears, Disney cartoon characters, and many pets, possess supernormal stimulus properties that appear ‘designed’ to elicit human parenting or nurturing behaviour (Lorenz 1943; Gould 1979; Frank & Frank 1982; Serpell 1996; Archer 1997; Chersini *et al* 2018). In some cases, this idea has been used to support the theory that pet-keeping is essentially a form of social parasitism (eg Archer 1997, 2011) in which the animals are seen as exploiting a novel ecological niche provided by humans’ inflexible parenting instincts. Others have proposed a less one-sided, more mutualistic interpretation in which both species potentially benefit from the relationship, though clearly not in the same ways (Serpell 1996; Serpell & Paul 2011). For the animals, the material and biological advantages of this association are relatively obvious. For the humans, a growing body of evidence suggests that interactions with companion animals stimulate fundamental attachment processes mediated by the release of the bonding hormone, oxytocin, which also appears to mitigate psychosocial stress (Julius *et al* 2013; Serpell *et al* 2017).

Anthropomorphism and pedomorphism also have consequences for animal welfare that may be either positive or negative depending on the circumstances. On the positive side, perceiving an animal to have a mind like one’s own implies that it is capable of experiencing conscious feelings and emotions, and that it is therefore worthy of greater moral consideration (Bastian *et al* 2012; Gray *et al* 2012). Clearly, in this context, anthropomorphism has the potential to arouse greater sensitivity to perceived welfare problems in animals, thereby making it less likely that these problems will be ignored or overlooked. Lockwood (2005), for example, has noted that animal protection supporters and activists in the USA are usually either current or former pet owners. Similarly, members of the pet-owning public have a tendency to react with moral outrage toward activities such as dog- or cat-eating, commercial breeding of pets, or the use of dogs and cats in biomedical research, while typically accepting the similar treatment of non-pet species (Serpell 2009). As previously suggested, anthropomorphism may also serve as an important motivator; encouraging people to try and help animals by becoming ethical vegetarians, animal activists, veterinarians, animal welfare scientists, and so on. Whether or not this greater concern for animal well-being among pet owners accurately and objectively reflects the animals’ true quality of life, however, is somewhat questionable. Other animals clearly have different needs,

interests and cognitive capacities than humans, so using a human or child-like model as a guide to their welfare is likely to lead to at least some level of misunderstanding.

For example, anthropomorphic attributions imply that animals, like humans, are capable of premeditated intentional acts and that they can therefore, in principle, be held responsible for those acts (Waytz *et al* 2010). An example of the potential negative welfare consequences of this effect is the widespread belief among dog owners that their pets are capable of secondary emotions, such as guilt when they steal food, raid the trash, or soil the carpet while the owner is out of the house. Current evidence suggests that the majority of owners interpret the dog's 'guilty look' when they return home as evidence that it is fully aware of its transgression and therefore culpable. In reality, the results of controlled experiments suggest that dogs respond with characteristic guilty-looking behaviour when scolded by their owners regardless of whether or not they are actually guilty of any misdeed (Horowitz 2009). In such cases, close relationships and anthropomorphic attributions lead owners to subjectively overestimate the cognitive capacities of their pets and to punish them accordingly.

When they predispose owners to prioritise the quantity of an animal's life over its quality, strong anthropomorphic attachments can also give rise to severe and prolonged discomfort and distress in companion animals. A growing problem in small animal veterinary practice is the propensity of owners to reject euthanasia for terminally ill and suffering pets in favour of prolonging the animal's life at any cost (Sandøe *et al* 2016; Knesl *et al* 2017). While this is partly a consequence of veterinary medical advances and the increasing availability of previously inaccessible treatment options, it also reflects the tendency of owners to project essentially human notions of the value or 'sanctity' of life onto their pets rather than considering the animal's perspective. As Sandøe *et al* (2016) point out:

The human attachment to a companion animal can be strong and highly emotionally charged, making it difficult for some owners to be objective when it comes to making decisions about their companion's treatment

Objective evaluations of animal welfare become particularly problematic when the traits that tend to enhance people's attachments to animals are themselves associated with compromised health and welfare.

### **In sickness and in health: the dark side of 'cuteness'**

Some years ago, my son returned home with a three-week old, tail-less kitten that he found abandoned in the street. Fortunately, my veterinary contacts enabled us to obtain the necessary advice and assistance to care for such a young and helpless kitten, and after 2–3 weeks of bottle-feeding we were able to wean him successfully onto solid food. During this process, however, it became apparent that Henry (as we called him) was not a normal kitten. In addition to carrying the tail-less or 'Manx' gene, which is associated with spina bifida, it turned out that he had also been infected *in utero*

with feline panleukopenia and was, as a result, suffering from an untreatable neurological condition known as cerebellar hypoplasia (CH), or 'wobbly cat syndrome'. This meant that he could scarcely walk more than a few steps without falling over, displayed uncontrollable head tremors whenever he tried to focus on anything, and had great difficulty using his litter tray. At this point, we began to have some fraught discussions about whether it would be kinder to euthanase Henry rather than let him live with such profound disabilities. The primary arguments in favour of the euthanasia option were the potential for future suffering, and the fact that he would never get any better or be able to engage in most of the normal, species-typical activities that could be said to define a cat's nature or *telos* (*sensu* Rollin 1993). The argument against hinged entirely on our subjective impression that, in spite of his disability, Henry was not suffering anything worse than periodic and transient inconvenience, and occasional minor discomfort from his condition.

The second argument eventually prevailed, and Henry ultimately developed into one of the most engaging and rewarding cats we have ever lived with. His physical disabilities, however, did not improve. If anything, they became worse, at least with respect to consequences. His lack of a tail and his long hind legs associated with the Manx gene made his gait very unstable, and his larger size meant that when he fell or blundered into chairs and table legs the impact was more severe. He could not jump or climb, and his attempts to chase toys or flies invariably ended badly. Nevertheless, he appeared to be relatively undaunted by his affliction. He learned to 'fall' through the cat door to gain access to the back garden, he dominated the family dog who was many times his size, embedded his claws in people's legs when he wanted to be picked up, and never turned down an opportunity to play, despite the often painful consequences. For a cat, he was also intensely human-centered and sociable. He was unafraid of strangers, seemed to enjoy being the centre of attention, and appeared to like being picked up and cuddled. The idea that we once seriously considered euthanasing him began to seem callous and unethical — though this opinion was not necessarily shared by our friends and neighbours, some of whom clearly believed that it was cruel and self-indulgent of us to keep Henry alive.

It turns out that our experience with Henry was not an uncommon one. A Google or YouTube search for 'wobbly cat' will usher one into a sort of parallel universe containing countless affectionate videos and heart-warming stories involving cats with CH. Without exception, the owners of these animals describe them as the most endearing cats they have ever owned, while animal shelters and cat rescue groups who post videos of CH cats online seem to be able to find homes for them instantly while, at the same time, having great difficulty adopting out large numbers of ostensibly normal, healthy and homeless cats. So, what exactly is going on here? Why are some people, including myself, apparently drawn to these abnormal and physically compromised cats?

One possible answer is that CH cats are, in fact, more affectionate and friendly than normal cats, perhaps due to some additional neurological change associated with cerebellar hypoplasia or because of the effects of enhanced early handling and socialisation. Certainly, in Henry's case, he received more attention in early life than a normal kitten would have, and this may have increased his overall level of sociability. One reason to question this as a general explanation, however, is that the human affinity for sick and disabled pets appears to extend far beyond wobbly cats (see, for example, Segal 2011). In the animal-sheltering world, it is widely recognised that it is often easier to find homes for animals with medical problems or histories of abuse than it is to adopt the normal ones. In some parts of the USA, for instance, particular animal rescue groups specialise in adopting and providing home hospice care for shelter cats with end-stage renal disease. Since these cats would ordinarily be candidates for immediate euthanasia, this places shelter veterinarians in the egregious position of being able to re-home the terminally ill cats while having to euthanase the healthy ones for lack of adoptive homes (B Watson, personal communication 2018). I am not aware of any studies of the motivations underlying this type of phenomenon, but it appears to be driven by individuals who find the experience of caring for sick cats more rewarding than caring for healthy ones, presumably because the former are, by definition, more dependent and therefore more in need of care. Nor is this propensity restricted to cats.

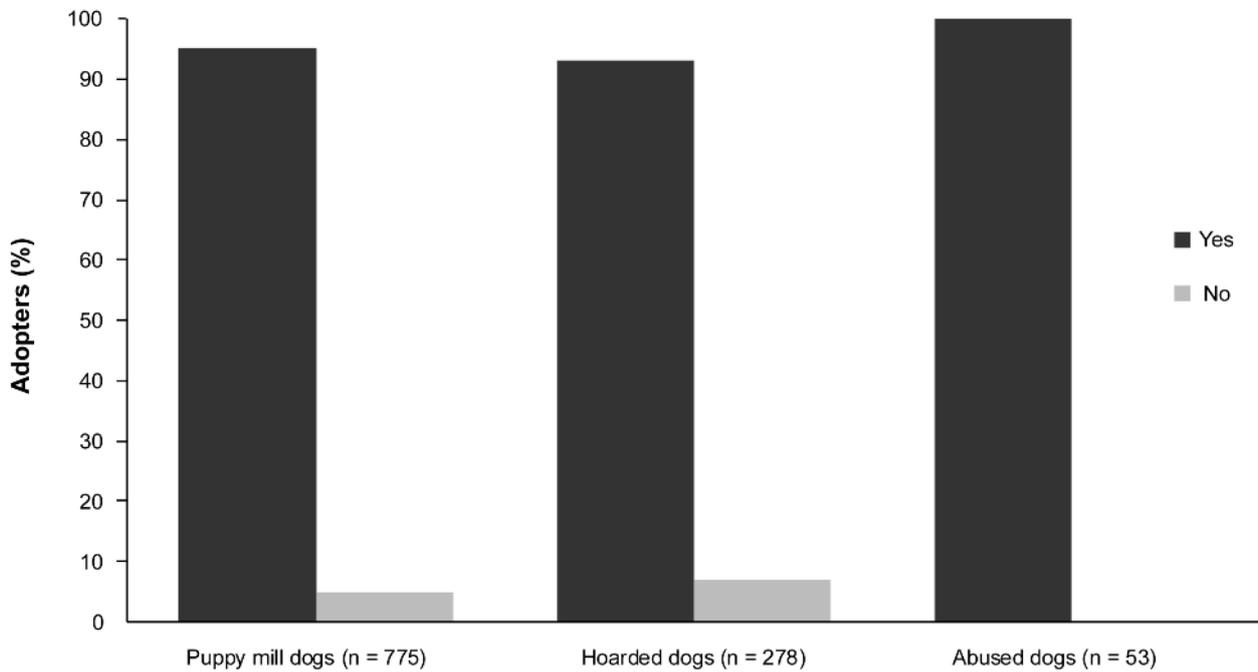
In a recent paper, Sandøe *et al* (2017) investigated the human motivations underlying the continued (and in some cases, growing) popularity of dog breeds that tend to suffer from health and welfare problems due to the effects of extreme conformation and/or genetically damaging breeding practices. The survey was conducted on a random, representative sample of Danish dog owners, and included the owners of three affected breeds (Cavalier King Charles spaniel, Chihuahua, and French bulldog) with extreme phenotypes and/or genetic histories associated with health problems, in addition to one unaffected breed (Cairn terrier) that is similar in size but otherwise average in terms of its health. A number of interesting findings emerged from this study, but two are particularly relevant to the present discussion. First, owners of the three affected breeds were more attached to their dogs than were the owners of the healthier Cairn terriers. Second, the perceived quality of owners' relationships with these dogs was marginally positively associated ( $P < 0.07$ ) with the number of frequently occurring health problems they experienced. As with the CH cats, it appears that these Danish dog owners showed a tendency to prefer the less healthy dogs with the more extreme phenotypes to the relatively normal and healthier ones.

Such preferences appear to apply to behavioural as well as physical problems. In a series of studies, McMillan and colleagues examined the behavioural characteristics of dogs that had been rescued and re-homed from various challenging life situations: eg former breeder dogs from so-called 'puppy mills' (McMillan *et al* 2011), dogs rescued

from 'hoarding' situations (McMillan *et al* 2016), and dogs that had been victims of serious physical abuse (McMillan *et al* 2015). In every case, these dogs exhibited a significantly higher prevalence of certain behavioural problems, particularly those associated with fear and anxiety, than matched comparison samples of 'normal' pet dogs. In several cases, these differences in behaviour were substantial. Puppy mill ex-breeder dogs, for instance, were between 5 and 7 times more likely to display fear in response to strangers, unfamiliar dogs, and non-social stimuli than were the current pets (McMillan *et al* 2011). Yet, despite these signs of chronic fear and anxiety, their owners' evaluations of their relationships with these dogs were overwhelmingly positive. When McMillan questioned them regarding their level of satisfaction with the dogs, and whether they would consider adopting another dog of the same type in the future, their responses to the first question were between 86 and 98% 'extremely satisfied' and only 0–2% 'not satisfied', and when asked whether they would consider adopting the same type of dog in the future, 93–100% agreed that they would (McMillan 2014, 2016) (see Figure 1). In other words, the experience of caring for these often severely emotionally disabled dogs, far from being a deterrent to future ownership, was apparently an added incentive, at least for these individuals.

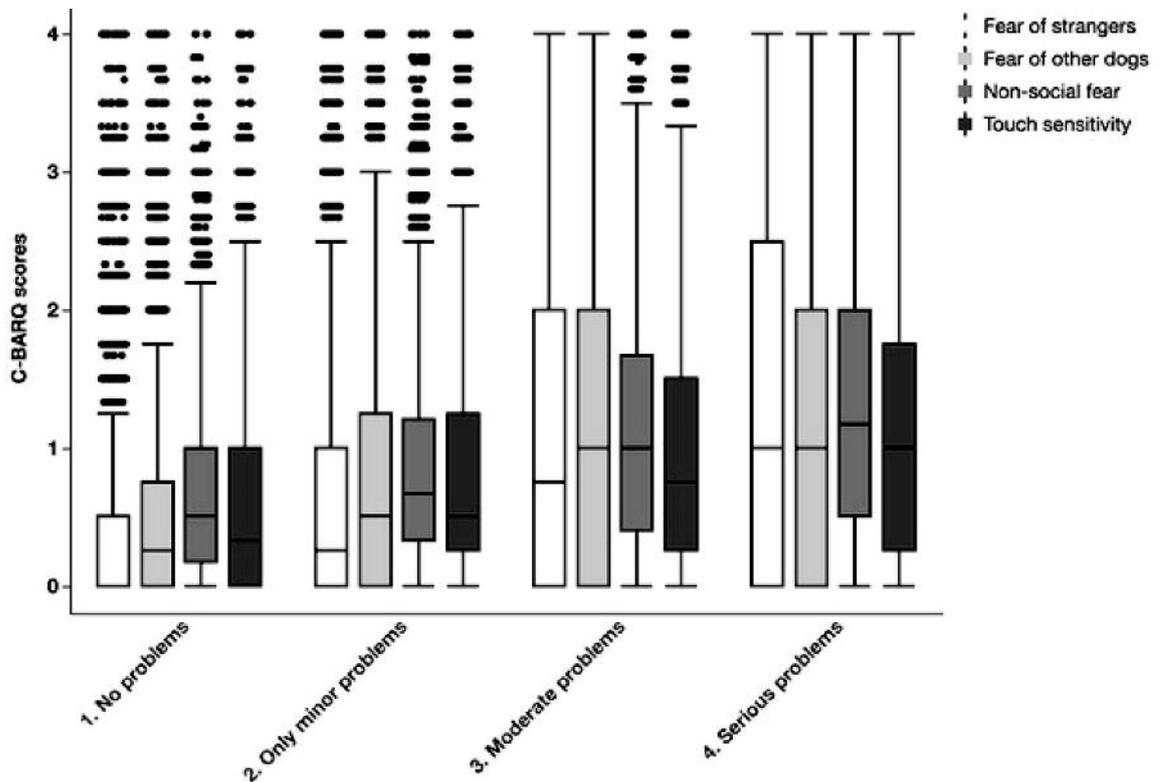
Evidence of the prevalence of fear- and anxiety-related behaviour problems in the pet dog population suggests that such incentives may be relatively widespread. The Canine Behavioral Assessment and Research Questionnaire (C-BARQ) database at the University of Pennsylvania has been collecting standardised behavioural evaluations of pet dogs from their owners via an online portal since 2005 and has now amassed more than 50,000 such assessments. In addition to addressing a variety of other aspects of behaviour, the C-BARQ includes four separate fear-related subscales — fear of strangers, fear of other dogs, fear of non-social stimuli, and touch sensitivity — with scores ranging from zero (absence of fearful responses) to 4 (extreme fearfulness). The population distribution of scores for these different subscales tend to be skewed toward zero, and yet between 14 and 18% of owners report that their dogs display fearfulness in the moderate to extreme range (scores of 2–4) in one or more of these contexts. More to the point, many owners do not appear to regard their dogs' extreme fear as being a problem. Among the background information owners are asked to provide before completing the C-BARQ is the question: 'Are you currently experiencing any problems with your dog's behaviour or temperament?' The offered response options are 'no problems', 'only minor problems', 'moderate problems' and 'serious problems.' As might be expected, owners' overall reported levels of perceived problems tend to increase in proportion to the severity of their dogs' fear-related behaviour (see Figure 2). However, it is also clear that there are large numbers of outliers — large numbers of dogs with moderate to extreme fearfulness scores on the C-BARQ whose owners report experiencing 'only minor problems' or 'no problems' at all with their behaviour.

Figure 1



Willingness of adopters of dogs with extreme anxiety/fearful behaviour to consider re-adopting dogs of the same type again (F McMillan, unpublished survey data, reproduced with permission).

Figure 2



Relationship between levels of fear/anxiety in pet dogs, as measured by the C-BARQ, and owner-reported experience of behavioural problems (Boxplots showing medians, 10th, 25th, 75th and 90th percentiles and outliers).

This result is reminiscent of those obtained in another study of dogs suffering from brachycephalic obstructive airway syndrome (BOAS). In this case, owners of 285 dogs belonging to various brachycephalic breeds were asked whether their dog currently had, or had a history of, breathing problems. Separately, the dogs were then diagnosed as ‘affected’ or ‘unaffected’ with BOAS using various medical criteria including the owners’ reports of respiratory difficulties and noisy breathing in four different standardised situations. More than half (58%) of the owners of the affected dogs reported that their dog did not have any breathing problems (Packer *et al* 2012). The authors conclude that the disparity between the dogs’ severe clinical symptoms, and their owners’ perceptions of no breathing problems would be likely to lead to these animals suffering indefinitely due to lack of veterinary treatment. Furthermore, in a recent, separate survey of 2,168 owners of brachycephalic dogs, Packer *et al* (2018) report that many owners, when asked what they would recommend most about their breed, freely admitted to liking their dogs’ increased level of dependence on them due to health and conformation problems.

## Discussion

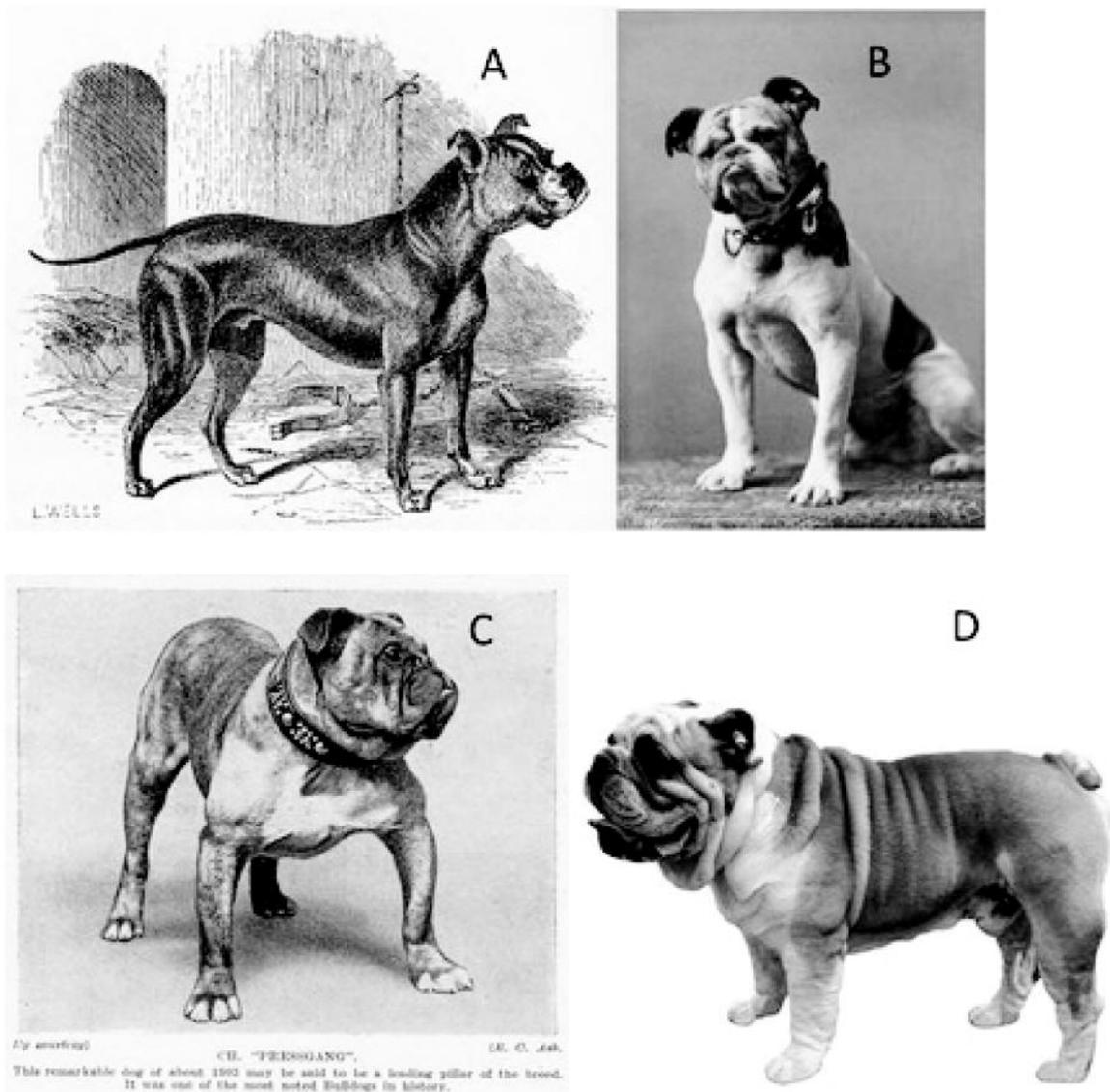
Just as modern dairy cows or broiler chickens are the products of artificial selection for high milk yield and rapid growth, respectively (Duncan 2001; Rushen 2001), so companion animals — or at least some companion animals — increasingly are products of selection for traits that make them more emotionally appealing to people. For many humans, that appeal lies primarily in their ability to mimic and in some cases exaggerate the infantile cues that stimulate parental nurturing responses and behaviour. The characteristic physical features of such animals — their small body size, short limbs relative to body size, soft skin and fur, large eyes relative to head size, domed foreheads, flattened muzzles, drooping ears, and so on — are perceived as ‘cute’ and tend to elicit care-giving motivations from people (Serpell 1996, 2003; Archer & Monton 2011; Little 2012; Golle *et al* 2013; Lehmann *et al* 2013; Waller *et al* 2013; Hecht & Horowitz 2015; Chersini *et al* 2018). Similarly, chronic health problems, such as CH, and behaviour problems, such as fearfulness and anxiety, that tend to increase these animals’ perceived vulnerability and dependency also appear to enhance their desirability as objects of human care-giving and attachment. Thus, it could be argued that humans have selected unconsciously for small, anxious, needy, unhealthy and vulnerable companion animals — animals with inherently compromised welfare — because these are precisely the traits that best satisfy their desire for things to nurture and parent. Furthermore, this process appears to be ongoing. The evolutionary trends in many dog and cat breeds seem to be toward increasingly accentuated anthropomorphic and paedomorphic anatomical and behavioural features, despite — and to some extent because of — their association with compromised mental and physical health (see Figure 3; Serpell 2003). Thus, the bulbous, protruding eyes and febrile

anxiety of the Chihuahua, and the hopelessly wobbly gait of the cat with cerebellar hypoplasia, are sources of attraction and endearment to many pet owners precisely because of their ability to evoke care-giving responses and the resulting cascade of neurophysiological rewards associated with these kinds of human-animal interactions.

These psychological processes are also likely to produce parallel effects on pet owners’ moral judgements. Causing harm to others for personal gain is one of the most widely held moral prohibitions in human cultures throughout the world (Graham *et al* 2009; Gray *et al* 2012). Since human relations with animals commonly involve harming them, either deliberately or inadvertently, for self-interested reasons, humans have developed a variety of psychological techniques to reduce the moral discomfort that arises inevitably from this. Probably the most widespread of these techniques has been variously termed ‘moral disengagement’ (Bandura 1999; Vollum *et al* 2004) or ‘dissonance avoidance’ (Bastian *et al* 2012; Bastian & Loughnan 2017) and it typically includes such things as dehumanising animals (the opposite of anthropomorphism), and avoiding social engagement with them that might otherwise lead to anthropomorphic attributions and an increase in moral concern for their welfare (Serpell 1996, 1999). This phenomenon has been demonstrated in a variety of contexts. For example, Bastian *et al* (2012) showed experimentally that human subjects are less likely to ascribe higher mental capacities to animals they consider appropriate to eat and are also more inclined to deny minds to food animals when reminded of the link between meat and animal suffering. The ability to identify and respond to suffering in animals may be similarly influenced by self-interested motives. In a study of dairy farm managers, for instance, Šárová *et al* (2011) found that they consistently underestimated the actual prevalence of lameness in their cows, presumably because acknowledging the true prevalence would cause moral conflict as well as entailing potentially costly remedial interventions.

This type of moral disengagement or dissonance avoidance is not readily available to pet owners. The ostensible benefit and purpose of pet-keeping is to provide owners with a source of non-human social and emotional support, and this function is partly predicated on owners attributing human-like or child-like feelings and cognitions to their pets (Serpell 2003). However, since this function sometimes causes or perpetuates animal suffering, albeit indirectly, pet owners must resort to other methods to alleviate moral responsibility for these outcomes. Dehumanising or dehumanising the pet would clearly defeat the whole object of the exercise, so other options must be found. In the cases described in this paper, these seem to involve either denying or minimising the welfare problems that currently exist in companion animals, or categorising them as ‘normal’ for the particular breeds that are affected. The tendency of pet owners to cast themselves as benevolent animal lovers may also help to reduce dissonance by feeding the perception that they are really acting in the animal’s best interests by caring

Figure 3



Morphological trends in the English bulldog breed illustrating the gradual exaggeration of anthropomorphic/paedomorphic features over historical time: A) 1859; B) 1889; C) 1903; and D) 2013.

for it and keeping it 'happy' (Bastian *et al* 2012). For these reasons, asking current or former owners of such animals to provide reliable and objective evaluations of their welfare is likely to be as fruitless as asking dairy farmers to make comparable assessments of their cows. More to the point, pet-keeping is considerably more common than dairy farming, and many if not the majority of animal advocates, veterinarians and animal welfare scientists are probably current or former pet owners with histories of strong emotional attachments to companion animals (Paul & Serpell 1993; Serpell 2005). All of which raises challenging questions regarding the extent to which pet owners in general, and animal welfare 'experts' in particular, can achieve sufficient psychological distance from these animals to allow truly objective assessments of their welfare.

While it helps to explain the apparent paradox of people claiming to be animal lovers while simultaneously helping to perpetuate severe welfare problems in the objects of their affection, the proposed theory is not without weaknesses. Not all companion animal breeds, for example, have been equally affected by anthropomorphic selection pressures, and not all pet owners are necessarily attracted to the most anthropomorphic or infantilised breeds with the most extreme welfare problems. Human preferences for animal companions are clearly complicated and not easily explained by any single all-encompassing hypothesis. Hopefully, future studies of the psychological origins of such preferences will help to clarify the motivations underlying human predilections for particular pets, as well as providing direction on how to improve companion animal welfare by modifying people's pet-related attitudes and behaviour.

### Animal welfare implications

Accurately evaluating an animal's quality of life demands a degree of scientific objectivity. It is therefore important to understand the factors that may limit or impede the objective assessment of welfare. People's attitudes to, and relationships with, companion animals are often highly anthropomorphic and subjective. Attributing human-like minds and motives to these animals is probably essential to their function as social support providers, and this in turn has driven selection for morphological and behavioural traits in some companion animal species/breeds that facilitate anthropomorphic and paedomorphic attributions. Many of these traits are also inherently detrimental to the animals' health and welfare. If, as suggested, the rewards of pet ownership are partly conditional on these traits, this is likely to create psychological resistance to addressing some of the most pressing welfare problems that currently exist, and which continue to be perpetuated, in these kinds of animals. Overcoming this resistance in order to effect long-term improvements in the health and welfare of companion animals will require novel programmes and policies to increase awareness among prospective pet owners that the very attributes they find so attractive and appealing are also those likely to cause their animals lifetimes of distress and discomfort. It will also require pressure on the animal breeding community to identify and de-accentuate the various traits that contribute significantly to conformation-related health and welfare problems. If such efforts fail, the welfare problems of companion animals are likely to increase in frequency and severity until they eventually become self-limiting — ie, when the financial and emotional costs to owners of maintaining the health of their pets exceed the psychological rewards derived from keeping them. Efforts to arrest this process before it reaches such an extreme and harmful endpoint would be beneficial to the welfare of both pets and their owners.

### Conclusion

McMullin (1982) wrote that emotive values such as attraction, feelings and emotions are alien to the work of natural science:

There is no reason to think that human emotionality is a trustworthy guide to the structures of the natural world. Indeed, there is every reason, historically speaking, to view emotive values, as Bacon did, as potentially distortive 'idols', projecting in anthropomorphic fashion the pattern of human wants, desires, and emotions on a world where they have no place

A major effect of human selection on the evolution of companion animals has been to accentuate those morphological and behavioural characteristics that elicit strong emotive values. In this sense, it could be said that many modern companion animals are quite literally becoming anthropomorphic or paedomorphic projections of 'human wants, desires and emotions.' In consequence, these types of animals present uniquely challenging obstacles to the objective assessment of their quality of life. Somewhat ironically, while pet-keeping may have provided many animal

welfare scientists (myself included) with the original impetus to pursue their chosen careers, it may also obstruct their ability to evaluate the welfare of these animals objectively. Future studies of companion animal welfare, and programmes and policies designed to change public attitudes and behaviour towards these animals, will need to be particularly alert to the potential difficulties created by these sorts of inherent biases.

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